Patent claims

1. Method for detecting tumour cells and their precursors in uterine cervical smears by simultaneously detecting at least two molecular markers in a cell.

2. Method according to Claim 1, characterized in that the markers are selected from at least one of the following groups: tumour suppressor genes, apoptosis genes, proliferation genes, repair genes and viral genes.

3. Method according to Claims 1 and 2, characterized in that at least one of the following markers is present in the combination: her2/neu, p16, p53, MN, mdm-2, bcl-2, EGF receptor, and specific DNA from the HPV subtypes 6, 11, 16, 18, 30, 31, 33, 35, 45, 51 and 52.

4. Method according to one of Claims 1 - 3, characterized in that the marker combinations her2/neu with p16 or EGF-R with p16 or p53 with her2/neu or her2/neu with mdm-2 or bcl-2 with p16 or bcl-2 with her2/neu or p16 with p53 are present.

5. Method according to one of claims 1 - 4, characterized in that 3 markers are detected.

6. Kit for implementing the method according to one of Claims 1 - 5.

7. Kit according to Claim 6, characterized in that the reagents are antibodies or nucleic acids.

8. Kit according to Claims 6 and 7, characterized in that the antibodies or nucleic acid probes are read directly or indirectly using fluorescent or chromogenic dye substances.

9. Method according to one of Claims 1 - 8, characterized in that it enables abnormal cells to be detected in an automated manner, characterized in that at least two markers are detected and the signal intensities are combined and summated.

10. Method according to Claim 9, characterized in that the automatic information processing is combined with a diagnostic expert system which enables the image information to be consolidated into a proposed diagnosis and, where appropriate, enables reflex testing to be carried out.

11. Entire process according to Claims 1 - 10, characterized in that the process consists of fully automatic sample preparation, sample staining, sample reading and information processing or subprocesses which comprise at least two of the given subprocesses.